



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,230	08/09/2001	Trung Tri Doan	MI22-1372	6111
21567	7590	12/15/2006	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			KUNEMUND, ROBERT M	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/927,230

Applicant(s)

DOAN, TRUNG TRI

Examiner

Robert M. Kunemund

Art Unit

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 9-23, 34, 35, 39-43, 45, 47 and 49-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-23, 34, 35, 45, 47 and 49-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/06</u> | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1722

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 7, 9 to 23 and 34, 35, 39 to 43, 45, 47 and 49 to 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al in view of Werkhoven (2003/0129826).

The Chiang et al reference teaches a method of atomic layer deposition, note entire reference. A substrate is placed into a deposition chamber. The substrate is then heated to a first temperature. A first gas is flowed into the chamber and chemisorbs onto the substrate. The temperature of the substrate is then change to a second temperature. Then the second gas is flowed into the chamber to finish growing the layer. The resulting structure can then be heated to a third temperature. The three temperatures are all different and can be higher or lower depending of the materials, note, claims. The difference between the instant claims and the prior art is the specific materials used and made. However, the Werkhoven reference teaches creating silicon nitride by ALD using dichlorosilane and ammonia, note pages 3 and 4. It would have been obvious to one of ordinary skill in the art to modify the Chiang et al reference by the teachings of the Werkhoven reference to grow silicon nitride in order to create a uniform layer. The Chiang et al reference further differs from the instant claims in the heating means. However, in the absence of unexpected results, it would have been

Art Unit: 1722

obvious to one of ordinary skill in the art to determine through routine experimentation the optimum, operable heating means in the Chiang et al reference in order to improve the uniformity of the heat across the wafer increasing the evenness of the deposition.

Claims 24 to 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiang et al. in view of Werkhoven

The Chiang et al and Werkhoven references are relied on for the same reasons as stated, supra, and differs from the instant claims in the heating temperatures.

However in the absence of unexpected results, it would have been obvious to one of ordinary skill in the art to determine through routine experimentation the optimum, operable heating temperatures in the Chiang et al reference in order to grow on the substrate at the best growth rates.

Response to Applicants' Arguments

Applicant's arguments filed September 26, 2006 have been fully considered but they are not persuasive.

Applicants' argument concerning the Chiang reference is noted. However, apparatus limitations in process claims are given little or no weight in determining patentability of the process. The instant specification paragraphs 25 and 27 clearly indicate to one of ordinary skill in the art that any means can be used to remove heat from the substrate. Also, it states that the heat pump claimed does not effect the processing. It merely removes heat, like other means. Also, the specification does

teach that one still has another heating means along with the thermoelectric pump, so no simplification is done.

Applicants' argument concerning the obvious to try standard has been considered and not deemed persuasive. However, the instant specification teaches a variety of coolers can be used. Thus, this is not an obvious to try situation but merely a design choice using known means to one of ordinary skill in the art.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert M. Kunemund whose telephone number is 571-272-1464. The examiner can normally be reached on 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1722

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Robert M Kunemund
Primary Examiner
Art Unit 1722

RMK